Patent Application of

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SPECIFICATION

TITLE OF INVENTION

LARGE DIAMETER SPIRALLY FORMED PIPE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of provisional patent application No. 60/085,778

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STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO MICROFICHE APPENDIX

Not Applicable

BACKGROUND OF THE INVENTION

This invention relates to spirally formed pipe and more particularly to larger sizes than have been produced in the past.

Spirally formed pipe has been in use for the past several decades. It has been used for a variety of uses including culverts, storm drains and pile pipes. It is most often used as a round pipe product, but is also reshaped into an arch shape for use where increased water flow in required. Due to the method of manufacture and shipping requirements, the size of these products has been limited to a maximum diameter of 144 inches, and while many uses have been found for these products, it has not been considered for use in large diameter applications.

It is well known to produce various products in large diameter round and arched shapes, from bolted or welded together sections of material. The variety of uses includes metal buildings, grain silos, water and gas storage tanks, underpasses, and culverts.

While these products have been well accepted, they do require a crew of skilled workers, a large crane or lifting device for positioning panels, and considerable time to assemble.

A past process was considered to bring factory style spiral pipe manufacturing equipment near to the construction site to produce large diameter cylindrical homes. The round cylindrical shape has limited possibilities compared with the more traditional arched shape and has not been commercially accepted. The diameter contemplated by this past example was 15 feet, however, only a 144 inch diameter prototype structure was ever produced.

BRIEF SUMMARY OF THE INVENTION

With the creation of a new portable spiral pipe manufacturing machine, pending application number 09/212,048, it is now possible to produce spirally formed pipes at the location where the pipes are used, thus eliminating the limitations on size mandated by shipping requirements. Additionally, with the creation of a new large diameter arching machine, pending provisional application 60/085,777, it is now possible to reshape large diameter pipe into an arch shape.

This makes possible the use of large sized spirally formed pipes, for products that until now, have only been available in bolted or welded panel construction.

The invention is spirally formed pipe, round or reshaped into an arch shape, having a larger diameter than similar pipe produced in the past.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a perspective view showing a variety of applications of large diameter spirally formed cylindrical products.

FIG. 2 is a schematic representation of a portion of pipe product according to the invention.

FIG. 3 is an end view taken along lines 3-3 of FIG. 2 showing a round shape.

FIG. 4 is an end view taken along lines 4-4 of FIG. 2 showing an arch shape.

FIG. 5 is a sectional view taken along lines 5-5 of FIG. 2 showing pipe wall styles.

DETAILED DESCRIPTION OF THE INVENTION

Referring now in detail to the drawings, the present invention large diameter spirally formed pipe has many uses as clearly shown in FIG. 1. A large diameter spirally formed pipe is

reshaped into an arch shape and used as a highway overpass 52. A roadway 74 is paved through the lower portion of 52 while the cross street 82 is paved over the earth filled area above 52.
A large diameter spirally formed pipe is reshaped into an arch shape and used as a barn or storage building 37, while the openings at either end are enclosed 38 with walls, doors and utility openings as needed. A large diameter spirally formed pipe is reshaped into an arch shape and used as a home 45, while the openings at either end are enclosed 46 with walls, doors, windows, and patios as needed. Both the home 45 and barn 37 may be used above ground, or could be installed below ground as overpass 52 illustrates. Large diameter spirally formed pipe may be placed vertically and used as a grain silo 32, with formed panels 34 to enclose the top and as a water storage tank 61, with formed panels 62 to enclose the top. These are several different embodiments of uses for large diameter spirally formed pipes as can be employed with the present invention and are merely illustrative of the various uses. Traditional uses such as highway storm drain 21 and pile pipe or shell 67 are well known uses for spirally formed pipe, while overpasses 52, storage buildings 37, homes 45, silos 32 and water tanks 61 being larger in diameter, have generally been produced from formed metal panels with bolted or welded construction.

Referring now to FIG. 2, a pipe according to the invention is generally designated 10. The pipe is composed of an elongated strip of ductile material, such as galvanized steel, which is formed into adjacent, helical convolutions. As illustrated, convolutions 14 are joined at 12. Convolutions 14 form the wall of the pipe which may be smooth, corrugated or profiled. Section view FIG. 5. illustrates the variety of pipe wall styles. The smooth wall 16 is joined by a welded seam 15, the corrugated wall 18 is joined by a conventional double lock seam 17, and the profiled wall 22 is joined by a conventional double lock seam 21. As the pipe diameter is increased the thickness of material and size of corrugation or profile is typically also increased. So then, in most cases the dimensional proportions of the smooth, corrugated and profiled wall increases as pipe size is increased, although if desired can be held to a smaller size for some applications.

The pipe 10 may be round as shown in FIG. 3 or reshaped into an arch shape as shown in FIG. 4. A pipe according to the invention is larger than 15 feet in diameter when left in the round shape, and a pipe according to the invention is larger than 144 inches in diameter if it is then reshaped into an arch shape.